Online Thermal Measurements Database for Structure-Property Correlated Materials

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We introduce an online thermal measurements database which is intended to serve as a repository for thermal properties of materials. This online database is a NSF funded cyber infrastructure initiative aimed at serving the global heat transfer community. The database is well integrated into the widely popular nanohub.org. The data for the database is obtained through the experimental measurements of thermal properties by researchers around the globe using various test methods under specific test conditions. Several methods can be used to test a thermal property and one test method can measure several thermal properties. Each test is run under a set of conditions which can vary from experiment to experiment. Also, associated with each test is an uncertainty value in obtaining the results. Finally, the results of every test are published in the literature. The online database is a compilation of all such data which includes the material in question, the property explored, the test methods employed, the test conditions of the experiment, the results of the experiments, the uncertainty associated with the experiment and the literature where the results are published. The online database aims to provide a central searchable repository of such data which will benefit heat transfer community by allowing registered researchers to contribute new experimental data and new sample materials using easy-to-use web based forms. Researchers can easily search the database to find related data on samples, thermal properties and methods. Registered researchers can rate and comment upon the already existing experimental data in the database. They can also evaluate the helpfulness of others' comments. This functionality in the database will enable research community to sort out good data from the bad. In conclusion, the database described above is a novel way of cataloguing experimental data on thermal properties of materials, from across the globe.